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Maneuver Support Center takes shape at Fort Leonard Wood

More than 50 years have passed since the wilds of Central Missouri sprouted a basic training installation that housed 60,000 soldiers preparing to do battle in World War II. Fort Leonard Wood will soon see another wave of growth. This time, the installation is poised to become a cutting edge TRADOC installation. The planned Army Maneuver Support Center at Fort Leonard Wood will become home and workplace to about 32,000 military and civilian personnel. In place of ranks of rectangular temporary wood buildings, the landscape will be dominated by state-of-the-art training facilities.

The midwestern installation is being transformed on many fronts, and much of the work is being done by members of the Fort Leonard Wood Directorate of Public Works. Their stories show BRAC in a new light—not just as a process of closing and downsizing, but also as a means of transforming and revitalizing an enduring installation for tomorrow's missions.

Clearing the way for new missions

by Penelope Schmitt

During World War II, Fort Leonard Wood housed and trained as many as 60,000 soldiers in 1,600 temporary wooden buildings. In 1991, when the Army began to push its demolition program, 642 of those original buildings were still in use on the installation.

World War II wood buildings are cleared of asbestos and structural elements like windows before final demolition.

"We have the best demolition record in the Army, maybe in DoD," Sue Anderson said. As space manager for the installation, she is proud to say that a million square feet are gone from the installation's real property inventory, and the demolition program is 238,672 square feet ahead of scheduled demolitions.

How has the installation accomplished this ahead-of-schedule record? It has been a challenge, especially since Fort Leonard Wood is growing new missions, not losing old ones. Part of the answer has been a carefully considered post space allocation plan.

"We have redistributed space and realigned the whole installation," Anderson said. "Everyone and every building has been affected."

The installation has already gained missions, including DoD consolidated training in motor transport operations for Army, Marine, Air Force, and Navy operators. "Unit identity and consolidated living space have been important as we established the joint service training," Anderson explained. "Yet we have been able to exceed our demolition goals despite variances in space criteria and other issues."

"We have had strong support from every Garrison Commander we've worked with," she said. "They have all backed us up as we worked toward the goal."

The first step in freeing facilities for demolition is often the toughest—convincing installation leadership and tenants alike that expanding into all available roofed-over space is no longer a smart way to do business. "We take tenants on tour. Expectations go from the Taj Mahal to brass tacks pretty quickly when we explain what we are trying to do," Anderson said. With command backing, the DPW has been able to stand firm on TRADOC space guidelines. "Users and tenants gain an understanding of what we are trying to do for the installation's future and ultimately for their budgets."

The demolition program goals go hand in hand with the installation's

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Dan Harrison stands at a site that once sprouted temporary wood buildings to support World War II mobilization now grows wildflowers.

preparations for new missions moving to Fort Leonard Wood between 1998 and 1999. "It takes a lot of money, coordination, and planning to make sure obsolete space gets demolished and moving units find adequate space," Anderson said.

The early part of the program moved quickly, as the DPW took down all the buildings in designated areas. "We did our homework for NEPA, the McKinney Act, and asbestos removal," Anderson said. Since it takes about a year to complete the McKinney Act process, the longest part of the job truly has been the administrative part.

Yet clearing the old structures away is no simple smash and trash operation. As every DPW knows, asbestos-containing materials present special demolition and disposal problems. Pat Brugger, who oversees the demolitions, said, "Friable removable asbestos is taken out under a requirements contract. The law has changed in Missouri since we began the program, and now vinyl asbestos floor tile has also been included."

The installation has also been able to find a good way to dispose of debris. "The City of St. Robert has made its transfer station available to our contractor," Brugger said. "We have used a tub grinder to reduce the volume of wood and generate wood chips. The installation is also salvaging usable construction materials and makes them available for troop self-help projects or for resale through DRMO."

"At first, we tried to remove whole areas," said Angie Rolufs, a chief of the Planning Branch. "The goal was to completely clear the buildings and surrounding infrastructure. We tried to clear the most visible areas on post first, to improve the appearance of the installation."

"We tear out the asphalt, dig up unused pipeline, and return the areas as close to a park-like state as we can get them," Pat Brugger said. "Some areas may become building sites again later, others will not." Cleared areas have been seeded in wildflowers or native grasses, to improve habitat for plants and animals and also to cut down on the grass-mowing bill for the installation.

"Now all the easy moves have been made, and we are starting to hurt for space," Sue Anderson explained. Realignments will probably slow down until new facilities are constructed for activities arriving from Fort McClellan, Alabama. Still, Angie Rolufs and Sue Anderson are finding better homes for work groups still located in World War II wood buildings. "We are now doing renovations to permanent buildings so that we can move tenants," Rolufs said. "The Corps of Engineers Resident Office will soon be moving into a former dental facility, and we are moving an administrative group into a renovated medical barracks."

Though the job is not yet complete, Dan Harrison, the Engineering Division Chief, is confident the end is in sight. "In a few years, the only World War II wood buildings we'll have left are the few you will see in the Engineer Museum complex," he said. "They'll be exhibits of the way we used to live and work here—and that's the way it ought to be."

POC is Sue Anderson, (573) 596-0901 DSN 581. **PWD**

A backhoe removes asphalt pavement to return a building area to its natural state.

Redesigning the future Maneuver Support Center

by Penelope Schmitt

By the year 2000, Fort Leonard Wood will be a showcase installation of the future for Training and Doctrine Command. A planned $204 million construction package will double the size of the present Engineer Center in order to accommodate the MP and Chemical Schools. It will also include a new Army Chemical Defense Training Facility, housing for soldiers attending the NCO Academy, an MOUT urban warfare training facility, and an "MP Village" for realistic MP training.

"That's as much MCA construction as most installations would expect to do in 10 to 15 years," said John Morrissey, who heads up Fort Leonard Wood's planning effort for the Maneuver Support Center. "We are under tremendous time constraints, yet we want this effort to result in a model installation."

Successful planning and design are clearly they key to future satisfaction with the new facilities. "This is even more sensitive when you realize the traditions and strong personal feelings involved in closing Fort McClellan and moving the Military Police and Chemical Schools here," Morrissey said.

"We have done everything we can to ease the pain of the transition and to ensure our future facilities are a real improvement on the past."

The ***design charrette*** is the partnership technique that has brought the process along so quickly and with such success. What is it? "The name comes from France, where architecture students rushing to meet a deadline would be finishing their drawings for their final examinations as their carriages drove them to the university," Morrissey explained. "*En charrette* literally translates as "*in the carriage.*" Believe me, we have been designing on the run here, too!"

But there were a lot more passengers on this particular carriage than a single architect and his pencils. Planning partners include the Kansas City District and the Architect/Engineers who will design the facilities, command and staff at the Engineer Center and the present Chemical and Military Police schools, and Fort Leonard Wood facilities managers.

Not everyone could be present on-site for the design charette meetings, Morrissey said. "We held teleconferences with commanders at Fort McClellan every evening." he said. "Sometimes they went on long into the night."

"Settling on a plan for the 300,000-square-foot main facility, which will double the size of the present Engineer Center, proved to be the biggest issue. For a while, it seemed that we would never satisfy the Engineer, Chemical and Military Police School needs to hold onto their own identities and yet design a building with any architectural coherence. Fortunately Major General Gill, current Commander of the Engineer School and Center, cut the Gordian knot for us. He proposed that all parties adopt the Maneuver Support Center as our primary identity, and preserve command identities with specially designed interior features."

The phrase "state-of-the-art" takes on stronger meaning in the plans for the sophisticated new facilities to be built at the installation. One of the Chemical School's facilities will feature a fan-shaped bay of training facilities, each of which opens onto a common access area. The resulting building design has a soft-edged, attractive silhouette reflecting the advanced design of the interior systems. The vehicle washdown training facility, an important part of chemical school training, has been carefully landscaped to both fit the mission and enhance the appearance of the facility.

The MP village, which will enable trainees to practice crime-fighting operations in a lifelike setting, allows for interior "scene changes" for crime scenes. The village is also structured to permit separate training exercises for advanced trainees, who deal with hostage crises, bomb threats and other more complex and sensitive operations.

"Maintainability hasn't been ignored," Morrissey said. "Our DPW operations people were part of the planning process right along with us."

Mike Keeling, chief of Operations at the Fort Leonard Wood DPW, agreed. "The meetings got intense at times," he said. "But face-to-face, you can explain to the A/Es what you need and how things work in the real world. I could see changes happening to the people doing the design. You could see them thinking "oh, there's real live customers out there, we should take them into account.'"

Fortunately, the planning effort is focused on major training facilities. "We are blessed in having the infrastructure and housing resources both here and in neighboring communities. That part is ready. Also, the super job of clearing away obsolete facilities is ahead of schedule," Morrissey said.

A carefully executed environmental plan has been a second factor in the installation's favor. "We have worked very closely with the state of Missouri and the federal government from the beginning. Since we will become the home of the Army's Chemical School which includes training with obscurant (smoke), we have some challenging issues to address," Installation Environmental Planner Emily Brown, explained. She is coordinating the environmental impact statements (EIS) and other issues associated with all the new missions moving to Fort Leonard Wood as a result of BRAC actions.

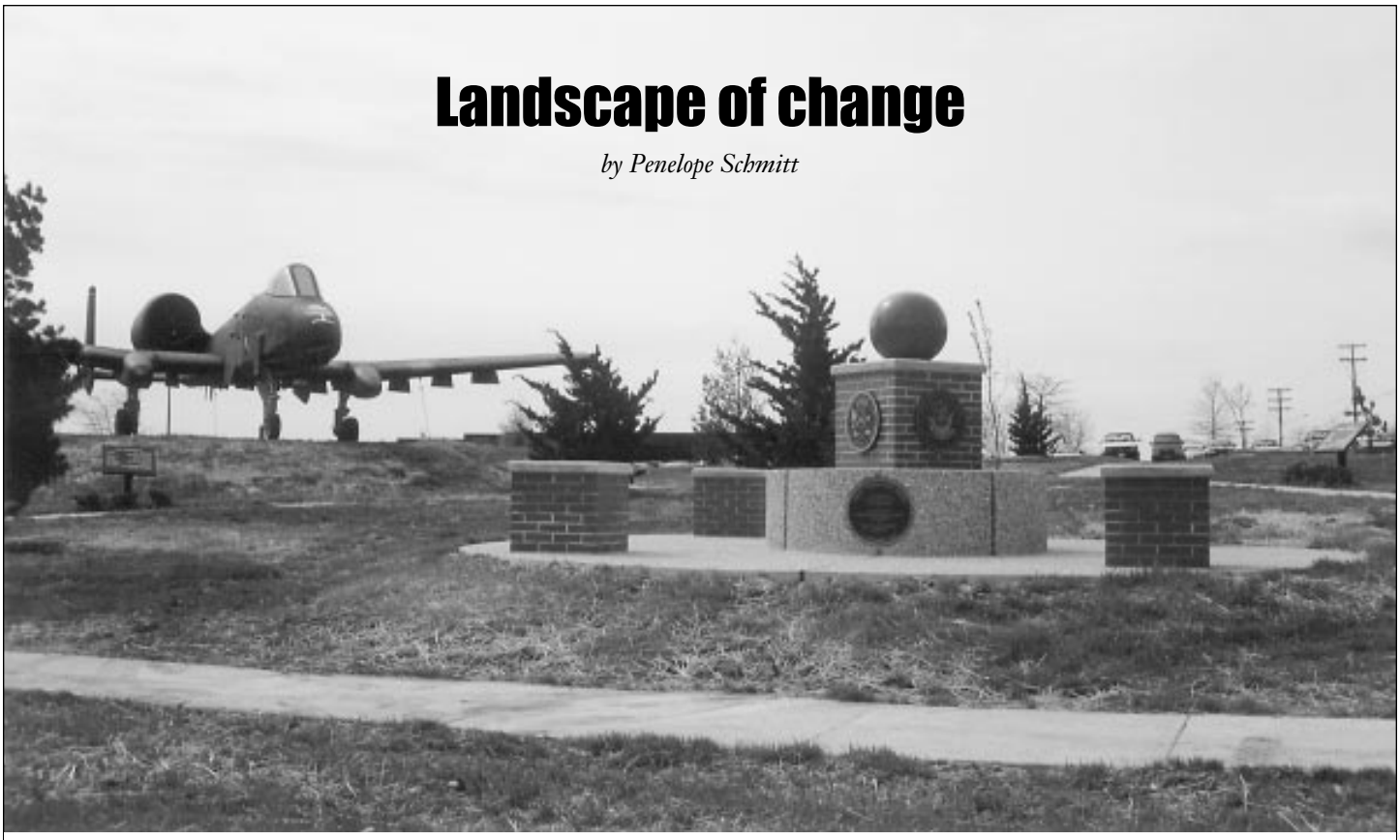
"The job has been complex, but not impossible," she said. "We have discovered several questions that have never been fully evaluated before. Our EIS work is well on track, though, and we have found that our long-term excellent relationship with State of Missouri and federal environmental agencies has made the job easier. They know that we have always worked with them in good faith, and will continue to do so now."

By the year 2000, Fort Leonard Wood will be a model Force XXI installation, offering the best in living, training and working facilities for the Army of the 21st Century.

POC is John Morrissey, (573) 563-7719 DSN 673. PWD

Landscape of change

by Penelope Schmitt



Joint Services Park celebrates Fort Leonard Wood's new training mission.

Clean, simple and uncluttered—that's "the look" for Fort Leonard Wood's move into the future. It's no accident. Unlike many rapidly growing areas, the installation hasn't simply crammed new buildings and features into available space.

"We deliberately chose to fill an engineer job vacancy with a landscape architect some years ago," said Dan Harrison, chief of Engineering Division in the Fort Leonard Wood DPW. "We knew that was the only way we could guarantee to put emphasis on our Installation Design Guide. Dan James has proved we were right."

In a windshield tour of the installation, James explained how both major design choices and small projects have worked together to give Fort Leonard Wood a modern, attractive appearance.

"Our first goal was to tear down World War II wood eyesores," James said. "We deliberately chose to remove buildings along the main entryways and sightlines." Newcomers to the post see green landscape or modern brick buildings as they enter.

"We also did the standard Army Communities of Excellence projects that have improved the appearance of so many installations. We got rid of all the painted rocks and yellow curbing, and we painted all our metal signs and even our fireplugs a dark brown. Those are simple steps, but they make a big difference."

"The next order of change was to make sure buildings conformed to our design guide. It's a very simple thing—on this installation we have red brick buildings with dark brown on any painted area. Whether it is an administrative facility or the Burger King, that's what we insist on. Simplicity works."

Stripping away clutter is not the whole story, however. New features have been carefully chosen, and sited to add distinction to the Midwestern post.

A high-tech "community bulletin board" now stands near a major intersection in the main cantonment area. Built of the installation's traditional red brick with dark brown trim, the sign has a digital readout. "We can program messages a full twelve months ahead," James said. "It has become a real center for installation information, and it always looks good."

Two small parks have been established to enhance public areas. Joint Services Park celebrates the installation's new Joint Service mission to train initial entry soldiers, marines, sailors and airmen. It features a central plaza surrounded by pieces of equipment donated by each service. A Navy CVE anchor gives ballast to the base of the park, an A10A Thunderbolt II Air Force plane sits at its crest, and the sides are flanked by an Army Engineer Rome Plow and a Marine Corps Armored Amphibious Assault Vehicle.

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"The Burger King concession wanted to capture this corner, but we succeeded in dedicating it to something that really represents our installation," James said. "We're proud that we've been able to make this happen. Soldiers love it—it has become a favorite spot for family graduation photos."

A second park near the Main PX and other services features an unusual "sculpture"—a section of the Berlin Wall which was donated to the installation by a unit that was deactivating and leaving Germany.

Elsewhere on the installation, James has taken advantages of an array of resources to create pleasant spots for the community to enjoy. Boy Scout volunteers have cleaned up a wooded area near a spring to create a picnic site.

Legacy program funds restored both the exterior and interior of a stone school house that dates back to 1911. "Installation groups use the buildings for meetings," James said. "We hosted Earth Day environmental programs there."

James pointed out playground areas. "We recently invested in a new kind of material to put on the ground," he said. "Chopped up tires. It may sound odd, but the material is clean, gives kids a soft landing, and just never wears out."

Other installation features include a three-mile fitness trail through woods near the Engineer Center. A slow walk through the trees proves that natural beauty is Fort Leonard Wood's most important asset. The installation's design for the future clears the way for everyone who lives, works, or visits here to enjoy the view.

POC is Dan James, (573) 563-0920 DSN 581. PWD

Rolling Heath School House, built in 1911, was restored as a Legacy project for installation use.

Engineer Rome Plow at Joint Services Park.

Self-help barracks project nears completion

by Penelope Schmitt

Basic furniture packages for senior enlisted personnel include bedroom and sitting room furniture.

A soldier installs wiring that will provide connections for phones, computers and other electrical equipment.

How good is self help at "bridging the gap to better barracks?" Excellent at Fort Leonard Wood. People sign up on a waiting list for sought-after rooms at the soldier-renovated Specker Barracks. Finished rooms provide a two-bedroom and shared bath for junior enlisted personnel, and a bedroom, sitting room and private bath for higher-ranked enlisted soldiers. The U-Do-It project began in mid-1992. To date, 350 rooms have been remodeled at a savings of over $1.5 million.

"You can see how it used to be," said Chuck Hunt of the DPW Housing Division. "Bare cinderblock walls, barebones basic facilities, institutional." The contrast is dramatic. Soldiers' rooms now feature attractive wall covering, carpet tile, and updated bath facilities. UNICOR furniture is sturdy, but with a handsome blonde wood finish far from the steel bunks of yesteryear. Hallways and public areas feature pleasant colors and a clean finish.

"We are really happy with this project," said Sergeant Schonbok, "It's a great assignment for the soldiers who have been working on it. Usually they don't get to do anything beyond field-expedient facilities construction. Here, they're learning a lot more about electrical wiring and better quality construction methods. This training will be with them for the rest of their lives."

The reconditioned barracks also include clean, newly equipped laundry rooms and renovated halls and lounges.

POC is Chuck Hunt, FLW Billeting Branch, (573) 596-0999 DSN 581. PWD

Sustaining infrastructure through BRAC

by Penelope Schmitt

What is it like to be on the receiving end of BRAC changes? The Fort Leonard Wood DPW Operations chief, Mike Keeling, has mixed feelings.

"We *are* growing, but fortunately not the way the installation grew in the first place. During World War II, 1,600 wood buildings were slapped down here in a matter of months. All of a sudden there were 60,000 people here. Today's BRAC actions will add 6 or 7 thousand to the 25,000 already using the installation. It's a big change, but with care, we can handle it."

What's to handle?—Added burdens on a shrinking work force and aging infrastructure.

The DPW work force today consists of 165 people to handle housing, business operations, fire prevention and protection, environment and engineering. The installation's contractor, Harbert-Yeargen, a division of Raytheon, fields 155 workers. That's half the number of people the DPW had available to maintain and operate the installation 10 years ago.

"BRAC is certainly going to increase our workload, but I don't see the prospect of getting any more workers. It's not looking good for more BASOPs money either," Keeling said.

A $204 million construction program will create the Maneuver Support Center, the new Chemical School and MP Village facilities, an urban combat training facility, and housing to support the NCO Academy. These facilities will add a million square feet to the installation real property inventory. "There's no way this eight percent increase in facilities is going to be matched by an eight percent increase in my work force," Keeling said. "The only way we could hope to take care of this would be to do what we are doing as fast as we can—get rid of facilities we can't handle any more."

"We have torn down more than a million square feet of obsolete buildings," Keeling said. "We've taken down about 325 buildings since 1990. TRADOC, our major command, has given us tremendous support. We have the best record in DoD."

"We privatized our gas system in 1995. The timing has been great." Fort Leonard Wood had one of the largest underground propane distribution systems in the country. The 35-year-old system could not be effectively maintained or upgraded to handle new facilities. "We transferred the system to a private utility, which is upgrading the system and converting it to natural gas. This made great sense for us," Keeling said.

Fort Leonard Wood contracts its water and sewer plant operations. Privatization isn't a real option there. "This is a very rural area. Surrounding communities wish they could use our facilities, not the other way around!" Keeling said. "We also have a proposal to study our electrical system, but we don't expect that to privatize right away. We pay an unusually low rate for electricity. The payback for privatizing just isn't there yet."

After the demolitions and divestitures, the installation is still a big, complex job. "Infrastructure just isn't sexy," Keeling said, echoing the frustrations of many DPW managers around the country. "We get money for things people can *see*. But the invisible problems are the ones that really hurt."

His biggest headache? "Our high temperature hot water and steam lines have been in the ground for about 35 years. Corrosion is eating up the pipes from the outside. We have had steam leaks so bad that we have had to put cages around them in barracks areas to keep soldiers from getting scald injuries. We had one leak under a decorative planter—it just looked like a box with smoke coming out of it."

Extreme problems have been addressed with help from the installation's Major Command, TRADOC. "I am concerned about funding for the future based on our MAR," Keeling said. MAR (maintenance and repair) funding is scored by TRADOC based on a series of tests. Presently, barracks and utilities get priority. "With shrinking budgets, problems have to get really bad before they are funded," Keeling explained. "Right now our road net doesn't look too bad, but asphalt isn't going to come up for funding anytime soon. In about two years, I expect we'll be losing trucks in potholes."

"Most of our installation initiatives have had to be in health and safety areas," Keeling said. "We had a million-dollar fix in our maintenance shops because the new vehicles have bigger turbo-charged diesel exhaust systems. It wasn't a question of how wide the door was—it was people unable to breathe. We also had to change light levels in some of our classroom facilities to deal with new training tools."

"Despite the scarcity of funds, I'm pleased with the way we work through infrastructure problems," Keeling said. "We work it out through video teleconference with TRADOC. It's a good decision-making process and we have had great support from COL Fernandez."

Other sources of funding can sometimes help, too. The installation's 29 miles of rail lines are an example. "We have a mobilization mission," Keeling said, "so with great help from Carol Jones at Forces Command we have been given funds for rail repairs and repairs and inspections for major bridges and crossings."

"CPW has helped us to get ROOFER up and running here. We use it, and it has been a big help. Our roofs are in pretty good shape."

"We have also been able to work unusually closely with Kansas City District during the design process for our new facilities," Keeling said. "We got face-to-face and really let them know our concerns for maintaining what we get. I have seen some changes in the people doing the design. They know we are real live customers out here. That should make a difference in maintainability down the road—and we need all the help we can get!"

POC is Mike Keeling, (573) 596-0945 DSN 581. PWD

ITAM sustains Normandy Training Area through intensified use

by Penelope Schmitt

The catchment basin in the foreground stops sediment from entering nearby watersheds.

The Normandy Training Area at Fort Leonard Wood extends as far as the eye can see—a rolling, upland vista of giant sandboxes where soldiers learn how to use backhoes, dozers, graders, earthmovers, dump trucks, compactors, compressors, drills, cranes, and other heavy combat construction unit equipment. Bluntly put, the job here is to rip the top off the ground and move dirt around.

As far back as 1984, the area had developed severe damage. Marvis Meyer, the DPW Management Agronomist in charge of land restoration for the Normandy Training Area, pointed out before and after differences in aerial photos. "Before" pictures show a moonscape of raw earth incised by deep gullies. Now, after three seasons of work, much of the area shows green in photos, and erosion patterns have diminished.

Meyer and his staff, together with the Natural Resources Conservation Service and the US Army Construction Engineering Research Laboratories, used ITAM (the Army's Integrated Training Area Management program) to design an erosion control plan. "We have contained sedimentation and erosion on the Normandy Area," Meyer said. "What's more, the land improvements have been accomplished despite intensified training uses."

The installation recently became the home of training under the Interservice Training Review Organization which trains Marine, Navy, and Air Force units along with Army engineers. "Some classes have grown from a dozen dozer operators to 60 per class," Meyer said. Bosnia missions have stepped up the need to train Combat Engineer Vehicle (CEV) drivers, who learn their trade by driving M-60 tank chassis on the Normandy area's network of tank trails.

The growing mission is carried out on the same 1,763 acres of land that have been used 50 weeks a year, every year since the 1950s. Meyer pointed out a small swath of bare rock. "The Army can't strip this piece of land to bedrock and move on," he said. "The soil, the watershed, and the training resource are irreplaceable assets that have to be protected."

How did Fort Leonard Wood turn this situation around?

"Planning played a big part," Meyer explained. "Using aerial photography and site inventories, we could see which areas had the most damage, and how much soil was being lost." Erosion was carrying more than 15,000 tons of soil away every year. Water quality in the Roubidoux Creek and nearby watersheds showed evidence of sedimentation. Pollution from sediment could be detected miles away in the underground aquifer.

"We decided to treat areas not being actively used, and to intercede aggressively at gully, sinkhole and runoff sites to stop soil loss."

To put the brakes on runaway erosion, Meyer's team broke up long, continuous slopes of training land into terraces. "We built up earth berms with

3:1 slopes around defined training areas to keep erosion in bounds," he said. "These areas between the terraces provide distinct "classrooms" for different types of training, and thus are well accepted by the trainers."

Rainfall can still bring on significant erosion, so corrugated plastic pipes have been installed to carry runoff from the terraces into drainageways. Then the water is fed into a vegetated area, which further helps to control erosion and sedimentation.

"Gully erosion can turn a drainage ditch into a 12-foot-deep seam in just a few weeks," Meyer said. "Fortunately, reshaping drainage ditches proves to be a fine training exercise for dozer, grader and backhoe classes." They contour to minimize erosion and put down asphalt to protect drainageways. "We use erosion control blankets to hold the soil in place until vegetation can take over the job of stopping erosion."

At the mouths of spillways and places where waterways drop into ditches, rock riprap stabilizes the soil. Crushed limestone keeps tank trails stable as well.

"We use sediment control ponds to stop eroded soil from reaching Smith Branch and Roubidoux Creek," Meyer explained. "But we have to keep them small. This part of Missouri has what we call a karst type of geology. If we let too much standing water accumulate, it can form sinkholes that let sediment get into the groundwater."

He pointed out a large wetland area contained by an earthen dam. "This used to be a lake," he said. "Then it developed a major sinkhole. We did a dye test that showed it was passing sediment through to a spring nine miles away from here. We lowered the water level and plugged the sinkhole with gravel and a fabric filter. We have no more pollution problems coming from this area."

Smith Branch, a tributary of Roubidoux Creek, runs along one edge of the training area. "We laid in wattles—bundles of willow cuttings 6 to 8 feet long—in a trench along this stream bank. Then we put in rows of silky dogwood and ninebark trees. They grow fast and put down a strong root system that holds the bank in place."

Erosion can open deep gullies like this one that required a temporary bridge.

The water level behind this earthen dam was lowered to close a sinkhole and create a wetland.

"We rotate the land the way you do crops," Meyer explained. "When the land isn't being used, we seed it with a variety of grasses and legumes. We have found fescue and switchgrass the easiest grasses to establish. Lathco flatpea offers promise as a perennial legume, but it has to be combined with other grasses, since it takes time to establish."

The Normandy conservation project is now more than two-thirds complete. To ensure that progress continues, Meyer has designed projects in small increments. "Whenever money becomes available, another piece of the training area gets attention. We're very satisfied with our progress here. We hope we'll have the work completed in about two more years."

POC is Marvis Meyer, (573) 563-0871. PWD

Army Communities of Excellence 1996 Awards

Commander-in-Chief Award:

Picatinny Arsenal, New Jersey

Winners:

Active Army
Fort Benning, Georgia
Red River Army Depot, Texarkana, Texas
Camp Zama, Japan
235th Base Support Battalion, Ansbach, Germany
US Army Garrison, Panama

Special Category
Holston Army Ammunition Plant, Kingsport, Tennessee

Army National Guard
Maryland
Arizona

Runners-Up:

Active Army
Fort Sill, Oklahoma
Fort Bragg, North Carolina
Redstone Arsenal, Huntsville, Alabama
Fort Leavenworth, Kansas
Fort Sam Houston, Texas
409th Base Support Battalion, Vilseck, Germany
US Army Garrison, Hawaii

Special Category
Seattle District, Seattle, Washington
Waterways Experiment Station, Vicksburg, Mississippi

Army National Guard
North Carolina
Louisiana
Montana
Wyoming

Army Reserve
81st Regional Support Command, Birmingham, Alabama
89th Regional Support Command, Wichita, Kansas
90th Regional Support Command, N. Little Rock, Arkansas
91st Division (Exercise), Saulsalito, California
96th Regional Support Command, Fort Douglas, Utah
143rd Transportation Command, Orlando, Florida
377th Theater Army Area Command, New Orleans, Louisiana

Army Reserve
95th Division, (Institutional Training), Oklahoma City, Oklahoma
120th Army Reserve Command, Fort Jackson, South Carolina
412th Engineer Command, Vicksburg, Mississippi

Rookie of the Year:

89th Regional Support Command, Wichita, Kansas
Minnesota Army National Guard

Chief of Staff, Army Honorable Mention

7th Army Reserve Command, Heidelberg, Germany
9th Army Reserve Command, Fort DeRussey, Hawaii
63rd Regional Support Command, Los Alamitos, California
94th Regional Support Command, Fort Devens, Massachusetts
100th Division (Institutional Training), Louisville, Kentucky
124th Regional Support Command, Seattle, Washington
279th Base Support Battalion, Bamberg, Germany
280th Base Support Battalion, Schweinfurt, Germany
311th Corps Support Command, Los Angeles, California
420th Engineer Brigade, Bryan, Texas
Army Reserve Personnel Center, St. Louis, Missouri
Camp Mobile, Korea
Colorado Army National Guard
Fort Campbell, Kentucky
Fort Carson, Colorado
Fort Knox, Kentucky
Fort Leonard Wood, Missouri
Fort McCoy, Wisconsin
Fort McPherson, Georgia
Fort Myer Military Community, Arlington, Virginia
Huntsville Engineer Division, Huntsville, Alabama
Massachusetts Army National Guard
National Guard Professional Education Center, N. Little Rock, Arkansas
North Dakota Army National Guard
Portland Engineer District, Portland, Oregon
South Carolina Army National Guard
Texas Army National Guard
Torii Station, Japan
US Army Garrison West Point, New York
US Army Publications Distribution Center, St. Louis, Missouri
Washington Army National Guard PWD

McKinney Homeless Act clearances—a must for WWII wood

More and more installations are meeting the challenge to dispose of their WWII wood buildings. However, before tearing any building down, the Army must clear the disposal of that building with the Housing and Urban Development Department (HUD). HUD screens these buildings to determine whether any of them are capable of providing shelter for the homeless under the provisions of the McKinney Homeless Act.

CPW's Derrick Mitchell assists Army installations by collecting, reviewing and forwarding the necessary checklists to HUD.

Although the vast majority of these buildings are unsuitable for use by the homeless, there is no relief from the requirements of the law. Timely processing of the disposal checklists is also often critical to a DPW's ability to economically complete the disposal.

Derrick Mitchell

"Over 200 hundred facilities disposals have been reported this quarter, and new checklists arrive every day," says Mitchell. "A special thank you to all the installation POCs for their timely responses in submitting checklists and helping us reduce our inventory of old, unnecessary deteriorating buildings."

POC is Derrick Mitchell, CECPW-FP, (703) 428-6083 DSN 328. PWD

Heads up for real property inventory

The CPW Real Property Management Team would like to thank all the real property managers who made this quarterly inventory one of the best ever.

Several installations were clearly well prepared for 31 March. Fort Bliss and Fort Meade had their IFS-M update tapes here by 2 April, followed in the next couple of days by: Fort Campbell, Carlisle Barracks, Fort Dix, Fort Drum, Fort Gordon, Fort Indiantown Gap, Fort Irwin, Fort Leavenworth, Fort Leonard Wood, Fort Monroe, Fort Ritchie, Fort Shafter, Fort Wainwright, and all of Europe.

The majority of installations were in by the 10 April target, and the quality assurance validation process is well under way. We have had our best ever response from our DR REAL users (primarily within the Corps of Engineers and the Army National Guard), with more than 94 percent in on time.

Thanks again for being ready to submit your responses immediately after the end of the quarter!

CPW Real Property Management Team:
Wiley Jernigan
Elaine Sims
Alexis Wathen
Derrick Mitchell

POC is Wiley Jernigan, CECPW-FP, (703) 428-7341 DSN 328. PWD

CPW offers new publications

The DPW Management Division in CPW's Directorate of Facilities Management recently issued Public Works Technical Bulletin (PWTB) 420-10-5, which contains over 90 different contract-related publications. PWTB 420-10-5 was updated on 1 March 1996 and distributed to all Army installations and other agencies.

Several of the publications in PWTB 420-10-5 are on diskettes and the World Wide Web (see CPW's Home Page). These documents are designed to assist DPW personnel responsible for developing performance work statements, to include technical information for quality assurance, bid schedules, and technical exhibits.

PWTB 420-10-5 also lists other information sources such as the Operations Division, Assistant Chief of Staff for Installation Management and the Defense Logistics Studies Information Exchange.

The DPW Management Division maintains a technical library of contract-related documents that are available upon request. This library contains:

- Actual solicitations.
- Lessons learned.
- How-to-write performance work statements.
- Quality assurance surveillance plans.
- Contract administration plans.
- Job order contracting.
- Service contract guides in eight RPMA functional areas.

To receive a copy of PWTB 420-10-5, please write to:

US Army Center for Public Works
Humphreys Engineer Center
ATTN: CECPW-FM
7701 Telegraph Road
Alexandria, VA 22315-3862

POC is Bob Hohenberg, CECPW-FM, (703) 428-6227, DSN 328, e-mail: bob.e.hohenberg.@cpw01.usace.army.mil PWD

Installation Status Report—a tool for decision makers

by Robert Conte

The Installation Status Report, or ISR, is an information system which provides decision makers at all levels with an objective assessment of the status of Army installations. The ISR has three parts: Infrastructure (ISR-Part I), Environment (ISR-Part II), and Services (ISR-Part III).

Part I was done in 1995 for the first time at Active Army installations in CONUS. Part II is currently being implemented for the first time at Active and RC CONUS installations. Part III is under development.

The ISR provides installation status in the form of C-ratings, familiar to many because they have been used in the Army's Unit Status Report for many years. The Unit Status Report uses C-ratings (C-1 being best and C-4 being worst) to measure a unit's personnel, training, maintenance, and equipment status. The ISR uses the same terms to show the status of installation level facilities, environment, and services.

For Part I, installation facilities are grouped into five broad areas of mission facilities:

- Strategic Mobility.
- Facilities.
- Housing.
- Community Facilities.
- Utility Systems.

Each of these areas is further divided into a number of categories, subcategories, and finally down to 215 individual facility category groups. The facility category groups (FCGs) are the lowest level to which facilities are tracked in the ISR. All Part I status and cost calculations are based on FCG-level algorithms. Higher level ratings and costs are subsequently calculated from the subordinate FCG level data.

At all levels, Part I provides separate C-ratings for quantity and quality, as well as the overall C-rating, which is simply the lower of the quality and quantity ratings.

Part I of the ISR evaluates the installation's facilities from a quantitative perspective. It determines what percent of its requirements is satisfied by either on-hand permanent or semi-permanent facilities. For each FCG, Part I also determines installation requirements by applying the Army's facilities criteria to the personnel and units assigned to that installation (as reflected in the Army Stationing and Installation Plan (ASIP)). It takes on-hand facilities from the installation's periodic update of its Real Property Inventory as maintained on the IFS-M or DR-REAL systems.

"A major system objective for FY 97 is the capability to load Real Property Inventory and requirements data directly into the installation ISR."

By dividing the installation's permanent and semi-permanent facilities inventory by its requirements, the ISR can determine the quantity C-ratings. The ISR software automatically calculates quantity C-ratings for each FCG and estimates construction costs to build up to each higher C-rating.

To achieve a quantity C-1 in an FCG, the installation must have at least 95 percent of its required facilities. Quantity ratings of C-2 and C-3 need at least 80 percent and 60 percent of requirements, respectively, with lower than 60 percent being a C-4 rating.

To facilitate installation level corrections to basic FCG data, installations were allowed to edit both Real Property Inventory and requirements data within the ISR process. This was necessary to account for errors in the basic Real Property Inventory as well as recent inventory changes which would not have been captured before the latest submitted update.

A major system objective for FY 97 is the capability to load Real Property Inventory and requirements data directly into the installation ISR. If this objective is realized, installations will be able to automatically refresh the data in ISR from their Real Property Inventory and from their Real Property Planning and Analysis System.

The Part I report of the ISR also involves a qualitative evaluation of the condition of installation facilities in each FCG. The facility condition is expressed as a GREEN, AMBER, or RED color rating. These color ratings, like the C-ratings, are familiar to the Army's leadership. A quality C-rating is calculated from the distribution of the color ratings for those facilities in the same FCG. The key to uniform quality ratings is the use of approved Army-wide facilities standards.

Facility standards have been approved by the Army Staff level proponent for each facility group. Standards booklets contain a page for each major facility component and a worksheet where each component rating is recorded. Facility components are items such as building exterior, interior work space, bathrooms, and utilities.

A typical standards booklet consists of 10 to 15 component pages. Each page contains a general written description of the characteristics of a GREEN, AMBER, and RED facility as well as a graphic showing for each color rating.

Standards are designed for the facility user rather than an engineer. As such, Part I standards are generally structured to show symptoms of facility problems which can be identified by a non-technical user of the facility.

Overall facility color ratings are a function of the ratings of that facility's components. Once facility color ratings are recorded, the ISR software automatically calculates the FCG quality C-

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rating and estimates renovation costs to improve to each higher C-rating.

To achieve a Quality C-1 in an FCG, the installation must have at least 90 percent of its facilities rated GREEN. Quality ratings of C-2 and C-3 need at least 90 percent and 50 percent of facilities rated either GREEN or AMBER, respectively. If more than 50 percent of the facilities are rated RED, the installation gets a C-4 rating.

Another software enhancement being considered for the FY 97 ISR is a facility inspection worksheet which, once marked by the inspector, can be scanned directly into the ISR software. This will:

- Save the time required to input facility color ratings.
- Reduce errors in calculating overall facility quality ratings.
- Provide a vast amount of data which can be used at the installation to focus on DPW resources and priorities.

Part II of the ISR evaluates 24 different environmental programs, called Media, which include air quality, PCB management, threatened and endangered species. Each of the Part II Media is evaluated in four Areas: Program Performance, Environmental Condition, Mission Impact, and Compliance with legal requirements.

Like Part I, Part II uses Armywide standards to evaluate the installation's environmental programs. Each environmental Media receives a GREEN, AMBER, or RED rating for the four Areas. Standards are structured similar to those in Part I, except that no graphics are currently included. The unique combination of Area color ratings entered for each Media are used by the ISR software to generate the single Media C-Rating. The Areas of Compliance and Mission Impact are weighted heavier than Program Performance and Environmental Condition in the Part II C-Rating calculations.

Unlike Part I, Part II standards do assume a degree of technical background by the rater. Part II ratings should be done within the office of the installation environmental coordinator. However, significant input from the rest of the installation staff is expected when rating the environmental programs' impacts on the installation's ability to accomplish its mission (the Mission Impact Area).

Part II costing is not based on standard cost factors. Unlike Part I, the environmental project A106 database is available to extract exact Part II environmental cost estimates. A special ISR structured extract from this database is used to feed Part II. This also allows Part II reports to reflect funded as well as required dollars, giving an even more complete picture of the environmental status of the installation to decision makers.

There are highly visual data display programs to graphically portray both Part I and Part II data at the installation, MACOM, and HQDA levels. Such tools will facilitate the analysis of ISR data and work to build the ISR into the installation support decision making process.

The ISR is designed to give commanders at installations, MACOMs, and HQDA a common look at the quality and quantity of their facilities, and major environmental programs. It uses Armywide facilities criteria and condition standards as a gauge against which to measure the installation's facilities status, and uses Armywide environment standards to evaluate the installation's environmental programs. This allows decision makers at several levels to quickly identify problem areas both at specific installations and across several installations or programs.

The ISR also provides cost estimates for facilities (Part I) through a set of approved cost factors, and for environmental programs (Part II), by extracting data from the installation's A106 (previously DB1383) environmental project database. With installation status measurement against common standards and with uniform cost estimates, commanders and decision makers can focus attention, establish priorities, and direct funding to better achieve installation goals.

POC is Robert Conte, DAIM-MD, (703) 693-5533 DSN 223. PWD

Robert Conte works on Installation Status Report issues in the Plans and Operations Division of the OACSIM.

ACSIM's Plans Division moves

Effective 20 May, the Plans Division of Facilities and Housing Directorate joined the Operations Division to form the Plans and Operations Division of the ACSIM.

As part of the organizational change, we also made a physical move and are now located in room 1E677 of the Pentagon. Our telephone and fax numbers are the same and our e-mail addresses are the same. We will republish those shortly.

In general, we will continue to perform all of the functions we performed while a member of the Facilities and Housing Directorate. Please make note of our new office symbol, DAIM-MD, and adjust your correspondence accordingly.

Due to personnel losses, we've also had some reassignment of functions within Plans. Maureen Wylie has moved to the Resource Integration Office as part of this reorganization. Her work has been spread out among Jill Drury, Doug Macherey and Gary Meyer. Nancy Guilliams will be leaving this summer for the Army War College. Most of her work will being transferred to Jill Drury, who will become the interim Assessments Team leader.

Not associated with this organizational change was the retirement last month of MAJ Mike Costigan. Randy Klug has assumed Mike's duties on the ASIP and Greg Brewer has assumed Randy's duties on RPLANS.

POC is Stan Shelton, DAIM-MD, (703) 693-4583 DSN 223. PWD

Landscape plan at Fort Sam Houston—an award-winning first for DoD

by Kim Rohland

Most people don't think of landscaping as part of historic architecture, but what's planted where can make a big difference in the overall appearance of buildings and installations. It is precisely this challenge of where to position landscaping that led to a cooperative effort to create the first implemented Landscape Master Plan within the Department of Defense (DOD).

That plan was created for Fort Sam Houston, Texas, and brought together that installation's historic architecture office and a cultural resources team from the U.S. Army Construction Engineering Research Laboratories (CERL) in Champaign, Illinois.

Fort Sam Houston presented a variety of special challenges to the combined team. One of those challenges was the fact that the fort holds one of the largest collections of historic resources in DOD, with over 900 eligible for the National Register of Historic Places.

In addition to the sheer volume of information, the team also had to deal with the problems of water use in such a dry climate. "Fort Sam Houston wanted the team to review the landscape and suggest maintenance plans and improvements, but still conserve water," said Michael Hilger, Fort Sam Houston historic architect.

"We began by touring the post and gathering as much historic information and as many photos as we possibly

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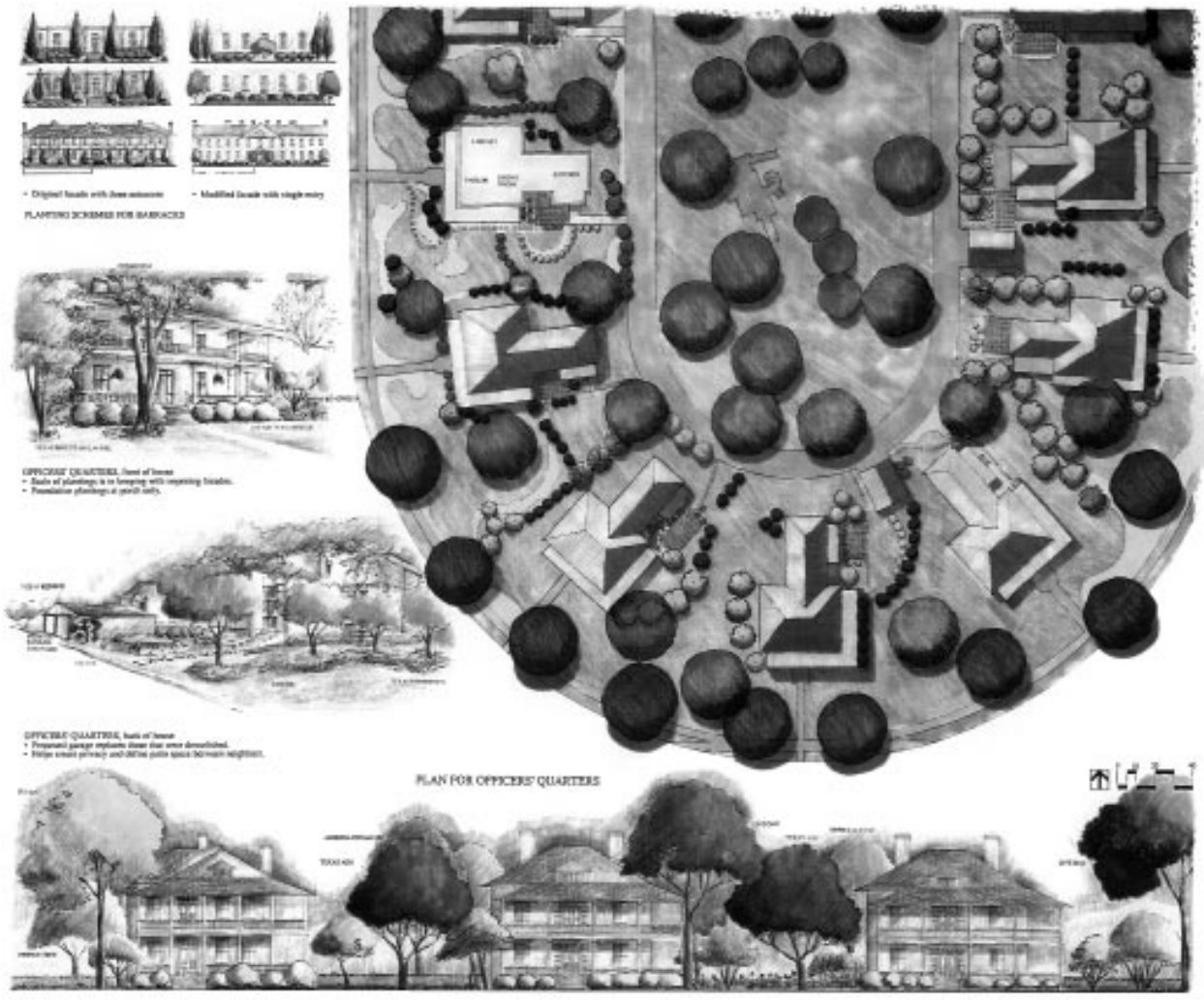


This section of Fort Sam Houston's Landscape Master Plan includes an aerial view of the Cavalry and Artillery Post and details of officers' quarters and planting schemes.

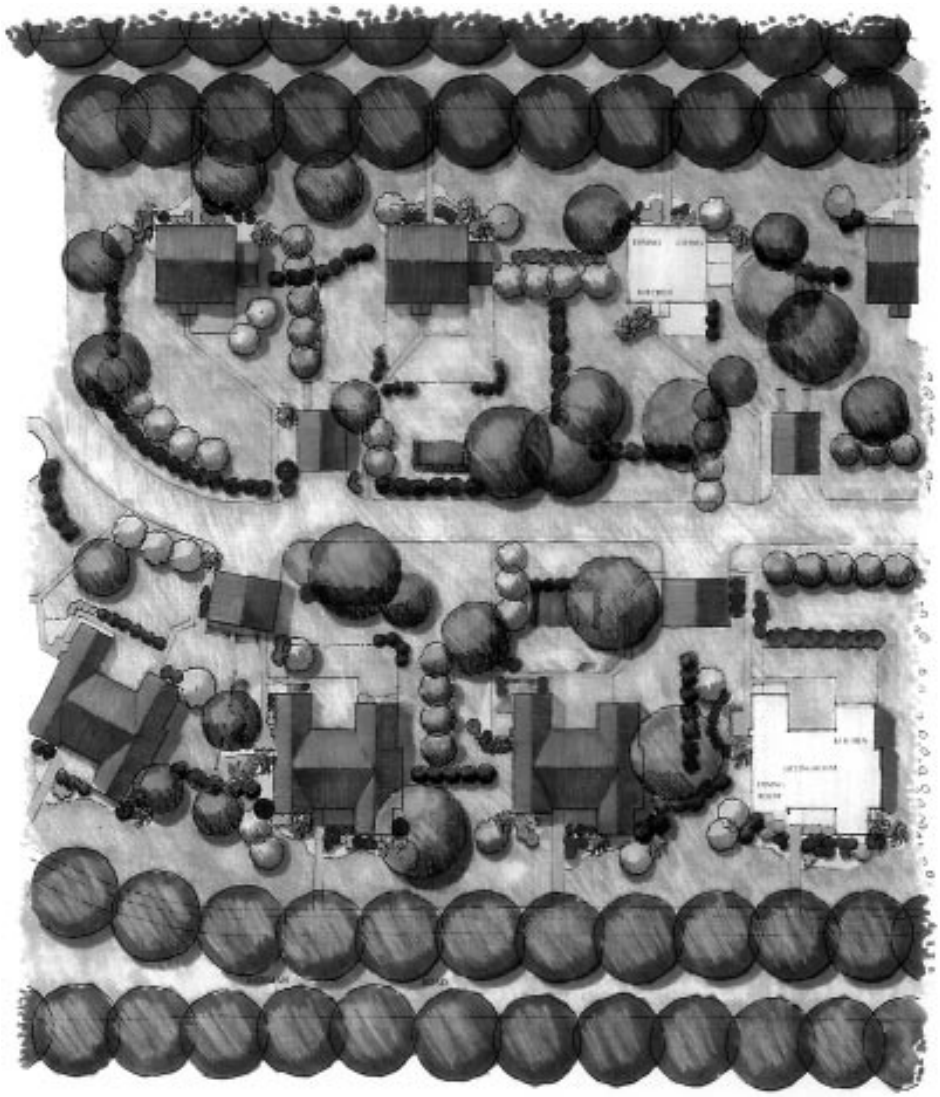
The artist renderings at left depict before and after views of new infantry post quarters.

could," said Helen Tyson Siewers, a landscape architect with CERL. "From there we brainstormed ideas on how to maintain or restore the historic look of the landscape while taking the natural context of the climate into consideration."

One of the ideas resulting from the brainstorming sessions was to develop a "demonstration garden" where residents of the post could observe various landscaping techniques using a number of different plants. "As a result of BRAC and downsizing, Fort Sam Houston is moving to a largely do-it-yourself form of landscaping. Residents handle their own areas, so we wanted to have someplace where such a transient population could quickly and easily learn what would work and what wouldn't," Hilger said.

"Many people forget that, unlike historic homes, the landscape is always changing. It comes to maturation and dies, so you have to consider the cyclical life cycle and deal with landscaping in a series of phases," Hilger added. The demonstration garden is designed to teach those phases first-hand, and it is located next to the Four Seasons Nursery where residents can purchase plants for landscaping their residences or workplaces.

Once the plans were made and appropriate ideas selected, the team began making sketches of proposed landscaping. "Landscaping is more than just planting," Hilger said, "knowing where not to plant is even more important." With that idea in mind, the team completed detailed sketches of numerous sites on post and included specific instructions or landscaping designs that ➤



Above: Plan for officers' quarters.

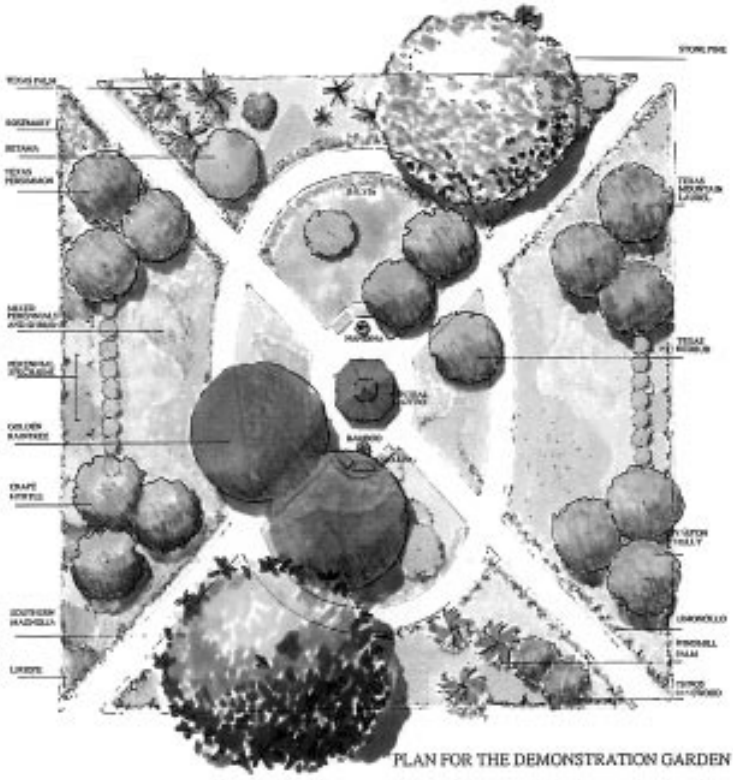
Left: Back view of single story officers' quarters.

The Demonstration Garden adjacent to the old Commissary is intended to create an attractive, informative oasis at the Community Center. It will serve as a showroom display for the Four Seasons Nursery, open to military families from the entire San Antonio area.

Right: View looking northeast.

Bottom left: View looking north.

Bottom right: The plan for the Garden features a central gazebo.



PLAN FOR THE DEMONSTRATION GARDEN

would best "show-off" the beautiful historic structures around post.

The Master Plan also recommended preserving open spaces such as the historic parade fields. It includes advice on where and where not to build.

Although the groups tasked with developing the Master Plan were separated by many miles, the spirit of teamwork and a determined goal brought them together. "This project was truly a partnership with CERL; everyone was part of a team," said Hilger. "The entire team was success oriented from the beginning. We knew that with such a large volume of information failure was not an option. We had to get it right from the start."

In fact, the team worked so well together that the implemented plan is not only a first in DOD, it's also award winning, taking first place in the Texas Historical Commission's Award of Excellence in Historic Architecture Research and third in the Cultural Resources Award for Installations category of the U.S. Army environmental competition. Because of its success, the Master Plan is now regarded as a model for other DOD installations.

POC is Michael Hilger, Fort Sam Houston historic preservation officer, (210) 221-4842. **PWD**

Kim Rohland is a public affairs specialist in CERL's Public Affairs Office.

Need cultural resources assistance? Call CERL!

The Fort Sam Houston Landscape Master Plan is just one example of the cultural resources work done by CERL. Researchers work with Army and Air Force installations and with Corps Districts and Divisions on a variety of projects and are available for phone consultation.

CERL can also provide DoD agencies with:

- Emergency compliance assistance.
- Training.
- Geographic Information Systems.
- Technical support in cultural resources analysis and record keeping, communications and data base development, and remote sensing.
- Computer-aided design and drafting technology in diverse areas of prehistoric and historic archaeology, historic architecture, historic landscapes, and compliance issues.

CERL's teams include professionals and graduate students who are experts in fields related to cultural resources, historic preservation, and compliance. And they're only a phone call away at 800-USA-CERL. **PWD**

The Army's Environmental Strategy into the 21st century is to lead the nation in protecting our environment and conserving natural resources for present and future generations as an integral part of our mission.

—The U.S. Army's *Commander's Guide to Environmental Management*

DoD environmental stewardship—a long-term goal

With more than 12 million acres, the Army is the second largest landholder in the United States— second only to the U.S. Department of the Interior. Therefore, it is crucial for the Army to practice pollution prevention and natural resource conservation.

The U.S. Army is perceived by many to be a poor environmental steward. Yet from 1988 to 1993, the Army reduced toxic chemical releases into the environment from 5,868,980 to 1,477,330 pounds per year; a reduction of 75 percent. In the same time period, total releases nationwide were only reduced by 43 percent.

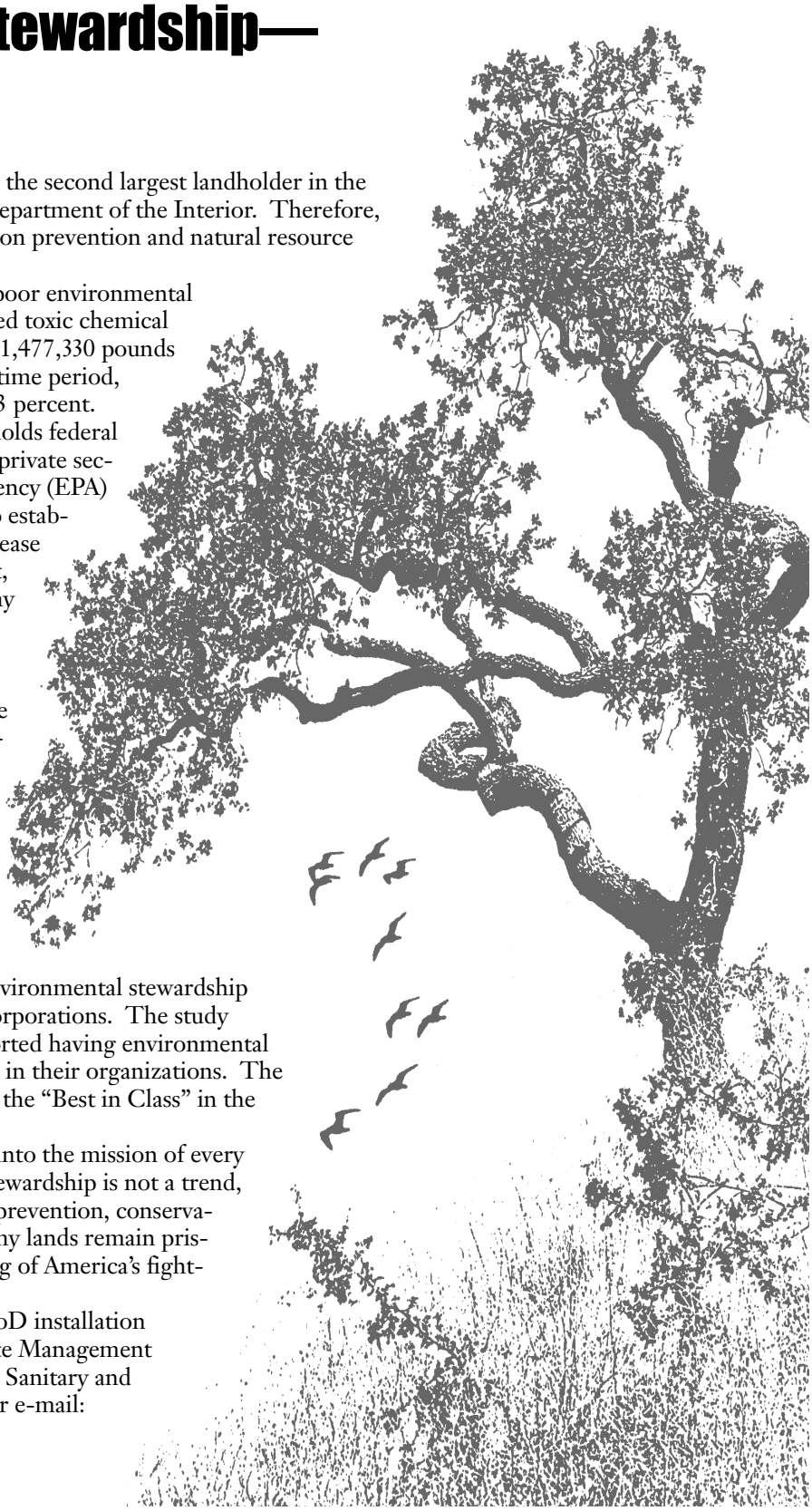
The 1992 Federal Facilities Compliance Act holds federal facilities to the same environmental standards as private sector facilities. The Environmental Protection Agency (EPA) was tasked, under the Superfund Amendments to establish a reporting system (TRI database) for the release of harmful chemicals. Based on the most current, published TRI submissions, combined U.S. Army facilities, contrary to public perception, did not even rate in the top 50 U.S. corporate polluters.

Not only is the Army striving to reduce emissions far below the current generation level of the private sector, but the Army is also employing innovative programs in areas such as affirmative procurement, source reduction, reuse/recycling, and composting.

The EPA conducted a survey, titled *Environmental Management System Benchmark Report: A Review of Federal Agencies and Selected Private Corporations* (EPA-300R-94-009, December 1994), which showed that Defense-related agencies consistently scored higher in areas of environmental stewardship than civilian federal agencies and participating corporations. The study found all Defense-related agencies surveyed reported having environmental management functions represented at high levels in their organizations. The Defense-related agencies were consistently rated the "Best in Class" in the areas surveyed.

Environmental initiatives are now integrated into the mission of every Army activity. This concept of environmental stewardship is not a trend, but a long term DoD goal. The results of these prevention, conservation, and remediation efforts will ensure that Army lands remain pristine while serving as integral areas for the training of America's fighting forces.

For information about these programs, DoD installation lessons learned, and other Integrated Solid Waste Management issues, please contact Laura Seabeneck of CPW's Sanitary and Chemical Division at (703) 806-5212/DSN 656 or e-mail: laura.e.seabeneck@cpw01.usace.army.mil **PWD**



Partnership creates energy savings

by Karen Jolley Drewen

Employees of BGE subcontractor Murphy Brothers Construction cross post in record time installing an 8-inch, high-pressure gas line from the Maryland Boulevard Gate to the building 345 boiler plant. Work on the line was completed in September 1995.

Aberdeen Proving Ground and the Baltimore Gas and Electric Company have developed an innovative partnership that will save the post millions of dollars in the future while conserving energy.

According to COL James M. Bosley, deputy installation commander, everyone on post should understand how the partnership will improve the quality of life for residents, soldiers and employees.

"Our goal is to make APG the Army's premier installation," Bosley said. "We will attract new activities and missions to APG. In these times of ever-shrinking budgets and cutbacks, we must continue to find innovative ways to provide improved service to more customers."

Bosley emphasized that each dollar spent must have the highest return on investment possible.

"Energy conservation is a financial resource that we must manage to our fullest advantage. The director of public works, the Energy Conservation Office, and all tenant command energy coordinators are setting an award-winning pace in energy conservation projects funding and management," he said. "The partnership with BGE has had an accelerating effect on all energy conservation programs at APG."

According to Gary Testerman, post energy manager, the good relationship between the post and BGE has existed for years, but new programs now take full advantage of laws that permit federal installations to create noncompetitive contracts with utility companies for energy service and conservation projects.

"Historically, APG has had a good relationship with BGE," he said. "When we began exploring how we could accept rebates, free services and any other benefits offered by the utility to customers — which is permitted under the law — we pursued it."

Testerman, who was named the post's energy manager in February 1994, learned about many of these laws at the Army's Energy Managers Workshop. That coincided with a restructuring within BGE, after it received authority from the Maryland State Legislature and the Maryland Public Service Commission to expand the types of services it could offer. The combination resulted in a partnership that will dramatically decrease the post's energy costs and increase energy conservation.

Bosley noted that the program by itself would not make the difference.

"It is very important that each person at APG, regardless of position, becomes an energy conservation manager for his or her area of responsibility," he said. "This is as simple as turning off your personal computer, office equipment and lighting when not in use, and properly securing your building at the end of the work day.

"We should develop a passion for energy conservation. The results will be additional dollars for post maintenance and operations, cleaner air, increased energy reserves for the future, less dependence on imported energy, increased military readiness, and additional funds to support both military and civilian jobs."

The partnership falls under a contract with BGE and the General Services Administration. APG attached to the GSA contract for utilities such as electric and gas services for the Aberdeen and Edgewood areas, electric service for five off-post locations and energy conservation projects. The contract's main provisions include:

- Basic purchase of utilities.
- A service agreement that allows APG to provide funding and have BGE do the work.
- A provision for BGE to invest in Energy Conservation projects.

As part of its basic utility service, BGE has invested more than $8 million to extend natural gas to individual metering locations, with all risk falling on the utility, Testerman said.

"BGE is presently converting ten main boiler locations to dual-fuel capability (able to burn both fuel oil and natural gas), and converting the Lee Court Family Housing heating system to gas," he said. When the project is complete in July, approximately 50 percent of the Aberdeen Area heating load will be supplied by cleaner burning, cheaper, and maintenance efficient gas-fired systems. BGE is working out details and preparing cost estimates that may lead to an additional extension of the APG gas line, such as running additional main lines to building 525, the building E-5126 boiler plant and to the Poverty Island Range for the Aberdeen Test Center's Fire Box.

BGE installed the smaller branch lines and building services with in-house crews, and used a subcontractor, Murphy Brothers Construction, to install the main line from the Maryland Boulevard Gate to the boiler plant in building 345.

"Both of these efforts were accomplished with a high level of professional workmanship, and in a swift and efficient manner, with little impact on post traffic flow," Testerman said.

BGE also had to extend its line from the Riverside Community, along Maryland Route 7 and U.S. Route 40 to the installation, making natural gas more readily available to thousands of Harford County locations.

"In dollars and cents, when the first phase of the gas conversion is complete, APG will start saving approximately $802,000 on heating costs per year."

—Gary Testerman, APG energy manager

In dollars and cents, when the first phase of the gas conversion is complete, APG will start saving approximately $802,000 on heating costs per year, Testerman said.

"We will stop consuming over one million gallons of No. 2 heating fuel and the discharge of 1.5 million pounds of air pollutants," he said. "This is extremely important because of air pollution reduction requirements that the state of Maryland has imposed on APG."

Testerman added that the interior environment of facilities also will improve. Facilities that have electric heat pumps will experience the greatest improvement— hot air and water systems powered by gas will provide more comfortable heating. DPW and Family Housing have awarded a contract to prepare the best design for the conversion of Patriot and Bayside Villages to gas as a main source of energy.

Testerman said that all new construction under MCA (Major Construction, Army, approved by Congress) will use natural gas, including the Army Research Laboratory Complex, Ground Support Facility, Physical Fitness Center and Emergency Operations Center. All future design for major renovation and construction will consider natural gas as the priority source of energy.

"As the network of on-post distribution becomes more widespread, all heating systems will be replaced with natural gas systems," he said. "Some have a short return on investment that will allow immediate replacement, and others with longer paybacks will be replaced when their useful life is over. The total conversion may take ten years or more."

With the availability of natural gas on post, APG has begun conversion of its vehicle fleet to Natural Gas Vehicles (NGV), with the DPW taking the lead in planning for a NGV fueling station.

The Directorate of Safety, Health and Environment provided the emphasis and funding for the effort; the Clean Air Act Amendments of 1990 require that fleets with more than ten vehicles and central fueling phase in clean fuel vehicles, such as those powered by natural gas. BGE designed, installed and will maintain the fueling station.

BGE also is managing and performing energy-efficient lighting retrofits for APG interior lighting systems, and is helping APG meet its commitment to the Environmental Protection Agency's Green Lights Program. EPA's goal is to reduce pollution by cutting the amount of fuel oil and nuclear fuel used to produce electricity. The installation of energy-efficient lighting in all facilities by the year 2005 should help achieve that goal.

The work consists of removing the conventional electric ballast, 40-watt fluorescent lamps, incandescent fixtures and exit signs, and replacing them with electronic ballasts, 32-watt fluorescent lamps, compact fluorescent fixtures and LED exit signs. The existing fixture housing and lens are then cleaned. In some cases the lenses and fixtures are replaced. In over-illuminated areas, fixtures may be removed or relocated.

BGE has completed 40 buildings in the Aberdeen Area and 17 in the Edge-

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wood Area. More than 1.5 million square feet out of 13 million is complete— 11.5 percent of the year 2005 target. Buildings were selected by savings-to-investment ratio, and no priority was given to tenant assignment.

Testerman said that a total of 21,327 fixtures have been completed, for a deferred energy use of 4,648,763 kilowatt-hours — an annual savings of $420,000 for lighting energy and more than $200,000 of air conditioning load, with approximately $88,000 in maintenance costs. The new lamps have an expected life of 20,000 hours. Few lamps should need replacing for four to five years, and the transformers are guaranteed for five years — this was verified by a pilot project for electronic transformers in the DPW main office, which were installed four years ago.

APG recently received a $500,000 rebate from BGE, which will be used to continue the lighting retrofit effort.

Performance contracting efforts will be the next step in the partnership. Performance contracting allows energy conservation projects to be accomplished without up-front dollars from the government.

"The basic contractual framework is in place for BGE to proceed with this type of work, and we have chosen two potential projects to start," Testerman said. "BGE has started the first step, which is a free energy audit of the facilities to guarantee that a sound energy conservation program exists. When the government is confident that the project will have energy savings greater than the cost of implementing the improvements, a delivery order will start the in-depth study and design."

This step will develop:

- The existing energy use baseline.
- The exact energy savings.
- Complete engineering drawings for review and approval.
- The amount, frequency and duration of energy savings payments that will be made to BGE.

BGE will install improvements, then start the payback period. When BGE's return on investment is complete, total savings revert to APG.

"The customer will be required to allow the energy savings project to remain unchanged for the life of the payback period," Testerman said. "Any changes in operation or physical plant must be carefully planned not to effect the energy savings and the government's ability to pay for the project from energy saved."

And the benefits of successful energy conservation can be far reaching.

"Energy conservation creates a ripple effect of benefits," he said. "As we save, funds can be used to improve the performance of other systems. As performance of energy-consuming systems goes up, worker comfort and productivity will increase."

POC is Gary Testerman, energy manager, Aberdeen Proving Ground DPW, (410) 278-5738, DSN 298. PWD

Karen Jolley Drewen is the editor of **APG News**.

Are your drop-out expulsion fuses dropping out?

by Anh Vo

The primary purpose of any fuse is to provide short circuit protection for cables of electrical distribution systems. This includes various devices on those systems such as transformers, capacitor banks, and sectionalizing tools. Fuses also provide protection from low-level overloads.

Fuses come in many sizes and shapes, with different characteristics, voltage ratings and current interrupting capabilities. There are two basic types— the current limiting fuses and the expulsion type fuses. The expulsion type is addressed in this article in response to a problem identified during a recent CPW staff assistance visit, where expulsion fuses were sometimes not "dropping-out" during an electrical fault.

Expulsion fuses can be either fixed or drop-out. The drop-out fuse is used for the higher voltages (ranging from 8.3kV to 169kV for Horn fiber-lined expulsion fuses, 17kV to 145kV for single-unit style solid boric acid fuses, and 2.75kV to 38kV for refill-unit style solid boric acid fuses).

High-voltage expulsion fuses are current interrupting devices which operate to open a circuit by expelling gases and vapors at a high velocity and pressure. These fuses have an expulsion end which hermetically seals and controls the expulsion rate of the interrupter.

The expulsion end includes a sleeve, a thin rupturable diaphragm, and an end cap. Cement is applied into the cap so that the space between the diaphragm and the end cap is filled, forming a sealed layer.

The heat of the arc is initiated by an electrical fault. This causes vapors and gases to be emitted. Under low-fault current conditions, internally generated gas and vapor pressures are low. The diaphragm member (circular disk) with the end cap remains at the end of interrupter so that a sufficient amount of gases and vapors is collected to extinguish the arc in the fuse end.

At higher fault currents, the intensity of the heat causes the gases and vapors to form at a higher rate and pressure. Under these conditions, the diaphragm member easily ruptures, allowing the pressure of the gases and vapor to break through the layer of cement and end cap to be expelled from the expulsion end.

One of the major drawbacks of the enclosure cap used at the end of the fuse to seal the devices is that it is affixed with varying amounts of cement. This method may result in an ineffective seal or a plugged end, preventing the escape of the pressures at the high fault current levels. The cap may also detach prematurely from the fuse at low-fault current levels.

Fuses are thermal devices and heat helps cause a fuse element to melt. Thus it is important to select the proper fuse and apply it according to the whole job and not just part of it.

POC is Anh Vo, CECPW-EE, (703) 806-5175 DSN 656. PWD

Protect your water system before accidents happen

A woman dies in a New York hospital after being exposed to ethylene glycol while undergoing hemodialysis treatment... After complaining of flu-like systems, several students at a Denver middle school are treated for ethylene glycol poisoning... City chemists find water samples from a high school in New Mexico contain levels of chromium that are 700 parts per million, much higher than the .05 acceptable level...

Sound scary? These are just some examples taken from today's headlines of what can happen with inadequate protection of potable water systems.

So what actually happened? In the first example, a check valve failed to prevent backflow from entering the pressurized circuit into the potable water system. In the second, the water fountains were contaminated with the poison because a backflow prevention device had not been installed in the heating system to prevent anti-freeze from mixing with the drinking water. In the third, the chromium used in the heating system's boilers to inhibit corrosion of the metal parts entered the water supply through leaky check valves.

All three of these examples can be traced back to the water system. All three could have been avoided with an adequate Cross-Connection Control Program, which protects potable water supply systems from becoming contaminated through cross-connections.

All suppliers of water from waterworks are required to establish and enforce a program of cross-connection and backflow prevention to ensure water quality. This includes Army installations. Army installations have the same types of cross-connections that are found in the private sector. Problems often identified in water systems at Army installations include malfunctioning backflow prevention devices, improperly installed devices, and unprotected cross-connections. While no incidents have been reported by the Army to date, as you can see, the potential exists.

CPW's Sanitary and Chemical Division can assist installations in developing a Cross-Connection Control Program, to include:

- A survey and inspection.
- Development of a cross-connection control plan.
- Cross-connection control and backflow prevention training.

Don't wait for an accident to happen. Call on us now.

POC is Gregory R. Jones, CECPW-ES, (703) 806-5208 DSN 656. PWD

Submit your articles and photographs to the *Public Works Digest*

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Losing steam means losing dollars

by Myron Kellberg

A properly working steam trap can be very efficient in doing what it was designed to do—preventing steam from escaping and being wasted. In a time when we are so energy conscious, and especially energy **conservation** conscious, escaping steam is a big concern. It represents lost energy **and** lost dollars.

First, let's consider how steam traps work. The float inside the water tank of a commode moves up and down with the changing water level and helps to control the flow and the level of the water in the tank. Steam traps operate in a similar manner. Floats rise and fall because of changing water levels in the steam trap housing to open and close valves.

Steam traps are not really "traps." They're more like "separators." Steam traps are used to separate water from steam, (liquid from gas). As the steam cools, losing the heat of vaporization (heat required to change water into steam), it condenses back into water, or condensate. In steam distribution systems (piping systems within buildings and under and over the ground outside), it is important to keep the steam and the condensate separated.

A steam trap is connected to a steam line at an appropriate location, (i.e., in long runs of main steam lines or where steam is intended to give up its heat, such as the outlet or downstream side of steam coils). Condensate enters a trap and is collected in a reservoir within the trap body. This raises the float, which opens the valve, and lets the condensate out of the trap. The condensate goes either onto the ground or into a condensate return system and back to the boiler to be reheated to steam. As the water drains out of the trap, the float lowers and, with very little steam leakage, closes the valve resealing the trap.

This description is for a float trap, but other traps, in numerous configurations, all with the same goal of trapping steam while passing condensate, are used by the thousands in large installations. Why is it so important that they function properly? If they don't, you lose not only precious energy, but money.

Steam is produced by heating water. In the Army, the heat to produce steam comes from fuel oil or natural gas. Let's assume that a gallon of fuel oil costs a dollar and that gallon of oil can produce about 120 pounds of steam. An average steam leak caused by a malfunctioning steam trap stuck in the open mode may lose 200 pounds of steam per hour. That would be equivalent to $1.67 per hour, $40 per day, or $1200 a month!

At a typical Army installation, there may be several hundred non-functioning steam traps that go unrepaired for six months or more because of lack of funds or manpower. How much would that cost?

300 leaking traps x 6 months x $1200/mo = $2,160,000

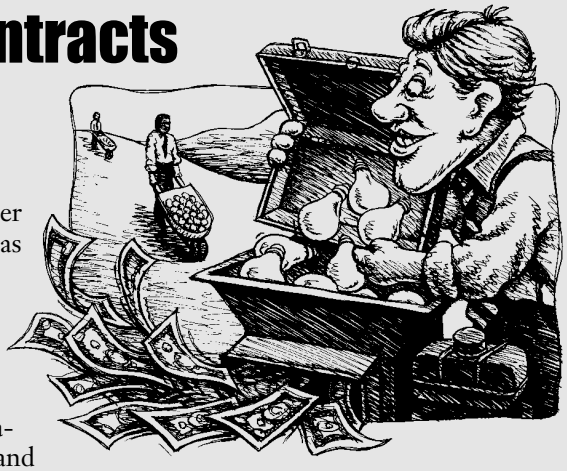
And this is just for one installation.

The Army has recognized this situation and set aside $10 million specifically for malfunctioning trap replacement for FY 96. To find out how your installation can obtain some of this funding, please contact your MACOM energy coordinator.

POC is Myron Kellberg, CECPW-EM, (703) 806-6072 DSN 656. PWD

Myron Kellberg works in CPW's Mechanical and Energy Division of the Engineering Directorate.

Fort Irwin contracts local utility



The National Training Center at Fort Irwin, California, has entered into a $5 million contract with Southern California Edison, the local utility company. Developed by the U.S. Army Corps of Engineers in Huntsville, Alabama, it's one of the largest demand side management contracts the Army has ever let.

This contract will replace more than 40,000 lights and remove all the PCB ballasts on Fort Irwin over a seven-month period. It will also standardize fixtures and reduce the light bulb inventory. After the project is completed, it will reduce the post's electrical load by 11 million watts.

In addition, the utility is retrofitting 26 homes at Fort Irwin with three different types of heating and cooling equipment. Ten of these homes will be fitted with closed loop ground source heat pumps, ten with an open loop system and six with standard air source heat pumps. Two hundred and twenty homes are already operating on a distributed closed loop ground source heat pump system that uses the municipal water system as part of the loop.

The homes are being fitted with a variety of metering equipment, to include a radio system that will send electrical and gas use data to the DPW every 15 minutes, 24 hours a day, 365 days of the year. At the end of the test period, the post will issue a shared energy savings contract that is based on actual onsite measured data.

POC is Rene Quinones, AFZJ-DPW, (619) 380-5048 DSN 470. PWD

Register now for Contract Administration course

There are still some spaces left for the FY 96 DPW Contract Administration course scheduled for 22-26 July 1996 at the Tom Bevill Center in Huntsville, Alabama. USACPW is sponsoring the course presented by the Huntsville Training Division of the US Army Corps of Engineers as part of the PROSPECT program.

The DPW Contract Administration course provides a basic overall survey of typical DPW services contract administration functions, including:

- Responsibilities of a contracting officer's representative.
- Types of contracts.
- Contracting for commercial services.
- Preparation for contract administration.
- Quality assurance planning.

The course material has been revised since the class was first taught in FY 89 and would benefit past participants equally well. Please submit applications *through your training coordinator* to:

US Army Engineering Support Center
ATTN: (CEHNC-TD-RG)
P.O. Box 1600
Huntsville, AL 35807-4301

or telephone the Registrar's Office at (205) 722-5821/5822.

POC is Bob Hohenberg, CECPW-FM, (703) 428-6227 DSN 328, e-mail: bob.e.hohenberg.@cpw01.usace.army.mil PWD

HELP WANTED!

I am looking for any scope of work for a historic interior survey. At Walter Reed Army Medical Center, we have approximately 125 historic buildings, many with their original interiors. If you have done a survey, or know someone who has, please call me at (202)782-0089 or DSN 662-0089, or mail a copy to me at:

David J. Phillips
Walter Reed Army Medical Center
Directorate of Public Works
6825 16th St. N.W.

POC is Dave Phillips, DPW WRAMC, (202) 782-0089 DSN 662. PWD

Computer engineer vacancy in Seoul, Korea

See Announcement S96-18-194 (EDFE) for details on a 24-month tour for a GS-854-11 to support USACE Pacific Ocean Division's network development. Look for the announcement at the Job Mart on the DDS and CPW's web site. PWD

Engineer vacancy at Misawa AFB, Japan

Pacific Ocean Division has an opening for a GS-800-12 (Interdisciplinary) Engineer at Misawa AFB in Japan. Complete details are available on the DDS and CPW's web site. PWD

Message from the Director

The IFS-M funding crisis has not gone away. Although MACOM Engineers have strongly supported the continuation of direct funding, the projected FY 97 cuts have not been restored. While several smaller MACOMs have agreed to contribute to cover the shortfall, that amount is not enough to maintain viability.

As a result, I recently issued a memorandum for all Directors of Public Works at IFS-M installations, dated 26 April 1996, to say that an installation subscription fee will be necessary.

To briefly describe our current situation, Army direct funding for IFS-M has been reduced by 75 percent in FY 97 and the years following. This loss translates into the following impacts:

- Suspension of technology upgrades, including replacement of the obsolete mini-computer-based architecture with a client-server system running in a Windows NT environment.
- Drastic reduction in customer assistance and hotline support to "as available" during normal business hours.
- Reduction in System Change Packages, which will increase the present four-year backlog.
- Potential compromise in the successful operation of new related and dependent applications, such as the RMAT Installation Support Module and redesigned RPLANS.

The impacts on your installation may not be immediately obvious, since the declining capability is gradual. However, there's no getting around that, at some point, system failures will increase and sharing data with other systems (such as STANFINS and SAACONS) will become more difficult or even impossible.

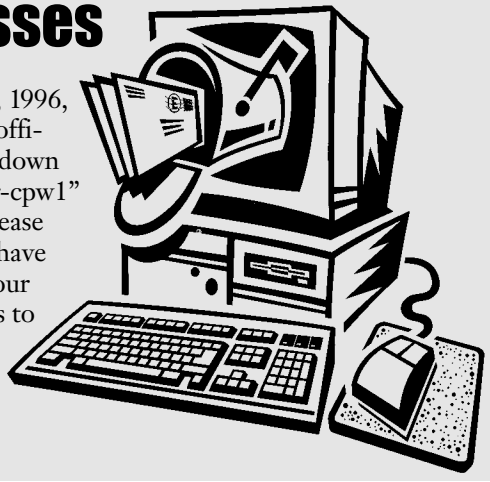
CPW's limited crisis response capability will mean that we can no longer immediately assist an installation whose system has "crashed." Where IFS-M has been fully implemented, and completely embedded in DPW business processes, this will mean longer periods in which the DPW is "out of business."

IFS-M is like any other large, complex, commercial integrated engineering software product, many of which are licensed on an annual basis or sold with maintenance contracts. Software maintenance is a continuing requirement, driven by myriad changes in the hardware, network — and most important — business environment. Without constant maintenance, we'll be locked into using aging or unavailable hardware. Worse yet, the inevitable software "patches" necessary to meet ever changing reporting requirements will have to be developed by installation-level programmers — using skills that few DPWs have.

My memorandum summarizes the reasons that made the decision to charge a fee unavoidable and details how we will implement the subscription system. It also includes a commitment and comment sheet. I would appreciate your immediate attention to this memorandum, so that we can plan system sustainment and continue to provide you with excellent, customer-driven service.

Edward T. Watling, P.E.
Director PWD

Change your CPW e-mail addresses



As of May 3, 1996, CPW has officially shut down its "belvoir-cpw1" e-mail host. Please make sure you have converted all your CPW addresses to the X.400 format: PWD

New version of Centralized Barracks Management available

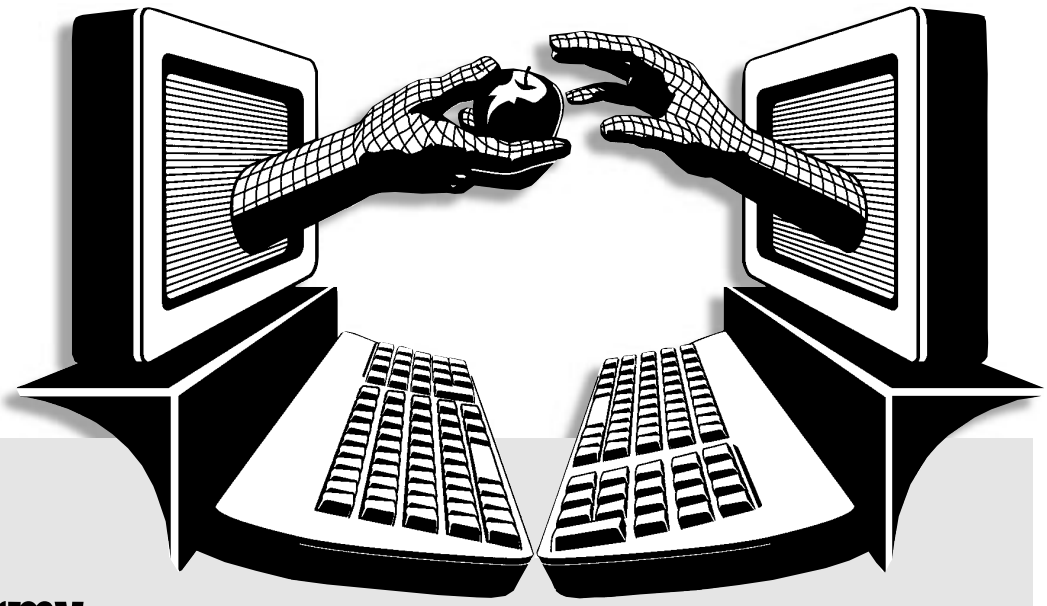
Good news for housing personnel! The updated disk version 1.11 of the Centralized Barracks Management System is now available. The following improvements/changes have been made to the system:

- On the Admin Screen, the cursor positions on the Password field.
- On Facility Room Information, the system-filled zeros have been eliminated.
- The tab order has been corrected on all screens.
- Version 1.11 is preloaded with a basic set of paths for other application software.
- In the report section, the user now has the ability to edit an individual's hand receipt.
- Troop status can be accessed from the Main Menu and the Reports Menu.
- 2085 Report is available.
- The Unassigned Room Report has been corrected.

The ACSIM is also developing a new setup file so that existing files will not be overwritten during the setup procedure.

To benefit from this update, you must have the following:
Windows for Workgroups, version 3.11, and 16 M RAM. The ACSIM is offering one year of total help desk support for Centralized Barracks Management at a cost of $3,000. POC is Wilbur Lewis, (703) 428-7512 DSN 328.

The ACSIM welcomes any requests for change or comments about the Central Barracks Management System. The change request must be made in detail to include the specific data elements and can be faxed to the ACSIM office to the attention of Wilbur Lewis at (703) 428-7481. PWD



DADPWS— a list server dedicated to Army Public Works issues

Now there is an additional way you can keep abreast of emerging issues in the Army Public Works community — the DADPWS list server!

The DADPWS list server is simply an e-mail address to which you send a message which is automatically distributed without edit or human intervention to everyone list. Everyone who has a subscription to the list will receive a copy of your note. Because the list server is very similar to a Command Radio Net where everyone "hears" your message, you should be sensitive to the traffic transmitted.

Joining a list server is easy. All you have to do is send the list server an e-mail message, with the command "subscribe [list name] your full name" on the first line of the message body.

Send your message to:

LSTSERV3@PENTAGON-HQDADSS.ARMY.MIL

With the command:

SUB DADPWS John Smith
(use your own name here)

You will receive a welcome message which gives you instructions on how to participate. Remember that any message that you send to the "list" (in this case, DADPWS@pentagon-hq-dadss.army.mil) is read by everybody!

POC is Rik Wiant, CECPW-FP, (703) 428-6086 DSN 328. PWD

Public Works Digest

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